

Listing of Claims

Claim 1 (Currently Amended): An implant assembly for treating proximal femur fractures and same side fractures of shaft of a femur, said femur containing a neck portion and a head portion, said shaft of said femur containing a medullary canal, a first plane passing through a long axis of said medullary canal and a mid-section of said neck portion and said head portion, said implant assembly comprising:

a intramedullary nail being adapted in use for insertion into said medullary canal of said femur, said intramedullary nail having a head, an intermediate portion and a knee end portion,

wherein said head of said intramedullary nail has a first plurality of proximal holes, a proximal axis of each of said first plurality of proximal holes being directed towards said head portion and said neck portion of said femur, and making an angle of approximately 120 degrees with a long axis of said intramedullary nail, said proximal axis lying on said first plane,

wherein said intermediate portion of said intramedullary nail has a first plurality of distal holes to hold a distal fragment of said femur, wherein a distal axis of each of said distal holes making an angle of approximately 90 degrees with said long axis of said intramedullary nail, said distal axis lying on a second plane, said second plane being defined by said distal axis and said long axis of said intramedullary nail; and

a ~~compact~~ targeting device (41) having:

a connecting end (59) to connect with said thigh end (43) of said intramedullary nail (42) by a temporary connecting bolt-(58),

a handle part (60),

a block of a second plurality of proximal holes (38), and

a block of a second plurality of distal holes-(40),

wherein an axis of each of said second plurality of proximal holes is the same as a proximal axis of a corresponding one of said first plurality of proximal holes,

wherein an axis of each of said second plurality of distal holes is the same as a distal axis of a corresponding one of said first plurality of distal holes,

wherein said second plurality of proximal holes lies on said first

plane and said second plurality of distal holes lie on said second plane,

whereby said second plurality of proximal holes and said second plurality of distal holes are in different planes.

~~where axis of said proximal holes directed towards head (1) and neck (2) of femur is making an angle of 120 degrees to 140 degrees with longitudinal axis of medullary canal (17) of femur to match the neck shaft angle (13) of femur to target corresponding proximal holes (37) of intramedullary nail (42), and at the same time~~

~~the plane of said proximal holes is making an angle of 5 degrees to 20 degrees with horizontal plane passing through long axis of femur (14), intramedullary nail and said plural distal holes (40) to match the ante version angle (16) of head and neck of femur and axis of said distal locking holes are making an angle of 90.degree. with longitudinal axis of intramedullary nail when said intramedullary nail is in position in medullary canal of femur;~~

~~a unitary intramedullary nail of short length version (54) and full length version (55) being adapted in use for insertion into the medullary canal of a femur, is cannulated in whole length having thigh end portion or head (43), intermediate portion or shaft (44) and knee end portion or tail (45) where said head is having plurality of proximal holes (37) and axis of said plural proximal holes directed towards head (1) and neck (2) of femur is making an angle of 120.degree. to 140.degree. with longitudinal axis of medullary canal and said nail to match neck shaft angle (13) of femur and at the same time the plane of said plural proximal holes (37) is making an angle of 5.degree. to 20.degree. with horizontal plane (14) passing through long axis of medullary canal of femur to match ante version angle (16) of head and neck of femur, where said shaft (44) is having plural distal holes (39) to hold distal fragment of femur in said short length version (54) and said knee end (45) is having anterior curvature, and plural distal holes in said full length version and axis of said distal holes is making an angle of 90.degree. with longitudinal axis of medullary canal (11) and said intramedullary nail (42) when said intramedullary nail is in position in medullary canal;~~

~~proximal sliding hip pins (46) are cannulated in whole length having head part (75), gliding smooth part (53) and holding part triflanged part (47) to hold head and~~

~~neck of femur where said triflanged part is having scalloped three flat equal surfaces up to 15 mm to 50 mm of span with mores taper towards leading end to get better grip and rotational stability in head (1) and neck (2) part of proximal fragment of fracture;~~
~~—— Butress plate (50) preferably with barrels (51) is having upper short transverse part (82) and lower long vertical part (83) wherein said lower vertical part is having at least two central large holes (52) with at least 2 mm of slit to allow continuous sliding contact with said sliding part (53) of proximal sliding hip pins (46) where shape and diameter of said central holes (52) are matching with the shape and diameter of barrels and corresponding said sliding part of said proximal hip pins wherein purpose of butress plate with barrels is to provide butress support to lateral cortex of lower part of greater trochanter (3) and lateral cortex of femur (22) when it is broken badly and to have lateral stable platform and uniform continuous sliding contact surface for limited guided controlled collapse of fracture gap.~~

Claim 2 (Currently Amended): An implant assembly of claim 27 \pm_2 wherein said ~~unitary~~ intramedullary nail of short length version (54) is characterized having has an anterior curvature in said ~~tail~~ knee end portion(45) to match an anterior curvature (48) of said medullary canal (47) of said femur to avoid abutting of a tip (34) of said ~~tail~~ (45) knee end to an anterior cortex (6) of middle part of said shaft (5) of said femur and prevent stress concentration in said shaft leading to pointing effect (35) ~~with thigh pain and fracture of shaft (5) of femur later on.~~

Claim 3 (Currently Amended): An implant assembly of claim 2 \pm_2 wherein said connecting end (59) of said targeting device (41) is characterized by having has a matching diameter with an internally threaded part (68) of said intramedullary nail, (42)

—— wherein said targeting device (41) is connected by said ~~eannulated~~ temporary connecting bolt (24) with said intramedullary nail, and

—— wherein said connecting end (59) of said targeting device is also short and compact to reduce the size of incision for insertion of said intramedullary nail and does not obstruct intraoperative imaging even though it is not radiolucent.

Claim 4 (Canceled)

Claim 5 (Canceled)

Claim 6 (Canceled)

Claim 7 (Currently Amended): An implant assembly of claim 2 ~~4~~, wherein said femur contains a calcar portion,

~~_____ wherein said block of plurality of proximal holes (38) of targeting device (41) is characterized having a first distance between a tip of said connecting end (59) of said targeting device and said proximal holes is kept at "X" value and at the same time a second distance in between a pair of said proximal holes is kept at "Y" value,~~

~~_____ wherein the values of "X" and "Y" in millimeters is kept in such a way that placement of one of said inferior plurality of proximal sliding hip pins (64) happens near said calcar portion (10) for better fixation, and~~

~~_____ another one of said superior plurality of proximal sliding hip pins (62) gets placed avoiding superior surface (9) of said neck portion (2) preventing "cut through" of said another one of said plurality of proximal sliding hip pins from said neck portion (2) and said head portion (4) of said femur.~~

Claim 8 (Currently Amended): An implant assembly of claim 2 ~~4~~, wherein said intramedullary nail is of a short length version, said block of said second plurality of distal holes (40) of targeting device (41) to be used when said short length version (54) of intramedullary nail (42) is placed in medullary canal (17), is characterized having a distance between a tip of said connecting end (59) of said targeting device and said distal holes of said targeting device is being kept at "Z" value in millimeters in such a way that said distal holes of said targeting device target corresponding with said distal locking holes (39) of said intramedullary nail before anterior curvature (18) of femur starts to get sure distal interlocking of said intramedullary nail with said femur, without any chance to miss the said distal holes (39) in nail.

Claim 9 (Currently Amended): An implant assembly of claim 2 ~~4~~, wherein said ~~unitary~~ intramedullary nail of short length version ~~(54)~~ and long length version ~~(55)~~ are characterized having reducing cross section area and wall thickness of said

intramedullary nail gradually from said thigh end portion (43) to said intermediate portion or shaft (44) to said distal knee end portion or tail (45) to match shape of said intramedullary nail implant with shape of intramedullary canal (17) and cortical thickness of femur to avoid high hoop stress in medullary canal while inserting said intramedullary nail.

Claim 10 (Canceled)

Claim 11 (Canceled)

Claim 12 (Canceled)

Claim 13 (Canceled)

Claim 14 (Currently Amended): An implant assembly of claim 2 ~~4~~, wherein said first plurality of proximal holes (37) of intramedullary nail (42) is characterized having distance between tip of ~~said~~ a connecting end (68) of said intramedullary nail and said first plurality of proximal holes is kept at "X1" value and ~~at the same time a~~ distance in between said proximal holes is kept at "Y1" value where the values of "X1" and "Y1" in millimeters are kept in such a way that placement of one of said inferior plurality of proximal sliding hip pins (64) happens near ~~said~~ a calcar portion of said femur (40) for better fixation, and

wherein another one of said superior plurality of proximal sliding hip (62) pins gets placed avoiding a superior surface (9) of neck preventing "cut through" of said another one of said plurality of proximal superior sliding hip pins from said neck portion (2) and said head portion (4) of said femur.

Claim 15 (Currently Amended): An implant assembly of claim 2 ~~4~~, wherein said first plurality of distal holes (39) of ~~said~~ a short length version (54) of said intramedullary nail (42) is characterized having distance between tip of said connecting end (68) of short length version intramedullary nail and said distal holes is kept at "Z1" value in millimeters in such a way that said distal holes of said targeting device (41) ~~target~~ corresponding to said distal locking holes of said short length

version intramedullary nail before anterior curvature (18) of femur starts to get sure distal interlocking of said nail with femur without any chance to miss ~~the~~ said distal holes in said nail.

Claim 16 (Canceled)

Claim 17 (Canceled)

Claim 18 (Currently Amended): An implant assembly of claim 2 ~~1~~, wherein ~~said~~ said ~~triflanged part (47) of proximal sliding hip pin (46) comprises a triflanged part with is characterized having~~ scalloped three flat equal surfaces up to 15 mm to 50 mm of span with mores taper towards leading end.

Claim 19 (Canceled)

Claim 20 (Canceled)

Claim 21 (Currently Amended): An implant assembly of ~~claim 1 and~~ claim 18 wherein ~~said triflanged part (47) of proximal sliding hip pin~~ is characterized having ~~said multiple~~ a plurality of holes (48) of at least 2 mm diameter connecting ~~said a~~ central cannulation (78) of said proximal hip pin to allow injection of liquid cement or other augmentation material (49) to augment the hold of said proximal hip pin (46) in said head portion (1) and said neck portion (2) of said femur.

Claim 22 (Canceled)

Claim 23 (Canceled)

Claim 24 (Currently Amended): An implant assembly of claim 2 ~~1~~, wherein each of said intramedullary nail (42) and said plurality of proximal hip pins (46) ~~are~~ characterized having has central cannulation.

Claim 25 (Canceled)

Claim 26 (Canceled)

Claim 27 (New): The implant assembly of claim 1, said implant assembly further comprising:

- a buttress plate having a plurality of central holes; and
- a plurality of proximal sliding hip pins, each to pass through a corresponding one of said first plurality of proximal holes and one of said central holes,

whereby said buttress plate provides additional support to a greater trochanter and a lateral cortex of said femur.

Claim 28 (New): An implant assembly for treating proximal femur fractures and same side fractures of shaft of a femur, said shaft portion of said femur containing a medullary canal, said femur containing a neck portion and a head portion, said implant assembly comprising

- an intramedullary nail being adapted in use for insertion into said medullary canal, said intramedullary nail having a head, an intermediate portion and a knee end portion, wherein said head has a plurality of proximal holes;
- a buttress plate having a plurality of central holes; and
- a plurality of proximal sliding hip pins, each to pass through a corresponding one of said plurality of proximal holes and one of said central holes.

Claim 29 (New): A method of treating a fracture of a femur bone, said fracture being located between the head of said femur and the intramedullary canal of said femur, said method utilizing a buttress plate in combination with an intramedullary nail, said intramedullary nail having a tail part, a shaft part, and a head part, said head part having a plurality of proximal holes, said method comprising:

- inserting said intramedullary nail into said intramedullary canal;
- placing said buttress plate on a surface of greater trochanter and lateral cortex of said femur, wherein said buttress plate has a central hole; and
- inserting a proximal hip pin through said central hole and one of said plurality of proximal holes such that said proximal hip pin extends across the fracture and into the neck and the head of said femur.